

A Presentation for the:

Remote Operation of Movable Bridges in Winnebago County



WisDOT Northeast Region

August 2005

Agenda

- Purpose of Meeting
- Frequently Asked Questions About Remote Control
- Recent Government Actions
- Coast Guard Information
- Current Remote Control Projects
- URS Feasibility Study for Oshkosh
- Where Do We Go From Here?
- Questions and Comments

Purpose of Meeting

- The purpose of today's meeting is to bring you up to date on the remote control studies in Winnebago County and to answer your questions. Our presentation will last about 20 minutes after which we will answer all of your questions. Please bear with us and hold your questions until we are done with our formal presentation.

Frequently Asked Questions About “Remote Control”

- What is the definition of “remote control?”
 - “Remote control” of a moveable bridge involves performing the same functions as on site, but at a remote location using strategically located video cameras to provide the real time visibility of bridge and waterway approaches. Remote control is performed by a trained bridge operator who will handle (operate) two or more bridges.

Frequently Asked Questions About “Remote Control”

- Why is “remote control” being considered?
 - Primarily to improve safety by providing better views of the bridge area and to reduce cost by increasing the efficiency of bridge operations.

Frequently Asked Questions About “Remote Control”

- What are the benefits of “remote control?”
 - Enhanced safety due to better visibility
 - Reduced cost of bridge operations
 - 200% to 300% improvement in efficiency
 - Increased service without added cost
 - Possibly longer hours in Menasha
 - Off-season operations at less cost
 - Bad weather operations at less cost

Frequently Asked Questions About “Remote Control”

- Is “remote control” of bridges in use at other locations?
 - Yes, at numerous bridges in Wisconsin
 - Manitowoc, WI – 10th St. Bridge controlled from 8th St. Bridge
 - Oshkosh, WI – Four Canadian National RR Bridges throughout Wisconsin, including the Fox River in Oshkosh controlled out of Stevens Point
 - Milwaukee, WI – The city currently operates nine bridges remotely from seven host locations. Three additional remote operations are planned.

Frequently Asked Questions About “Remote Control”

- If “remote control” is the answer, why wasn’t it implemented long ago?
 - In a word: technology. The development of fiber optics and high quality dependable video cameras has done much to advance the use of “remote control.” It has been in use for about 15 years in Wisconsin.

Frequently Asked Questions About “Remote Control”

- Is “remote control” as safe as on-site operations?
 - We believe that “remote control” actually enhances safety at the bridge for the following reasons:
 - Operator can see all critical locations concurrently. Four monitors showing both roadway approaches & both river approaches are grouped together right in front of the control panel.
 - There are no hidden blind spots with “remote control” such as with many current on-site operations.

Frequently Asked Questions About “Remote Control”

- Additional Reasons Remote Control Enhances Safety
 - The operator need not leave the control station to observe a blind spot
 - Peds, bikes & cars on back side of both leaves visible when bridge is open
 - The operator can see under the bridge at all times

Frequently Asked Questions About “Remote Control”

- More Reasons Remote Control Enhances Safety
 - The operator will be able to communicate with a person on the bridge without leaving the control console with speakers & microphones
 - Publicized videotaping will deter unsafe actions
 - Low profile persons - children, recumbent bikes & wheelchairs will be much more visible

Frequently Asked Questions About “Remote Control”



View Looking North

View Looking South

Operator's Remote View
of Tayco Street Bridge

Frequently Asked Questions About “Remote Control”



View Looking Upstream View Looking Downstream
Operator's Remote View
of Tayco Street Bridge

Frequently Asked Questions About “Remote Control”

- Are there other additional benefits with “remote control?”
 - An additional benefit is the ability to record activities with each camera and use this recording to address gate offenders, traffic incidents, and other criminal activities.
 - Another benefit is the ability to provide real time bridge status to emergency service providers (police, fire and ambulance).

Frequently Asked Questions About “Remote Control”

- What are the cost benefits of “remote control?”
 - If one bridge is remotely operated, the annual cost of operations is reduced by about 45%. If two bridges are remotely operated from a common location, the cost is reduced by about 65%. The capital cost to make the conversion is recovered in about four or five years.

Recent Government Actions

- Legislature transferred additional funding for bridge operations
- WisDOT has decided to not modify hours of operation based on the additional funding and the USCG jurisdiction decision
- Menasha has requested a remote control study for its bridges
- WisDOT programmed money for Menasha remote control project
- WisDOT programmed money for Oshkosh remote control project

Coast Guard Information

- Coast Guard will resume jurisdiction on the Lower Fox River (Stated Feb. 15, 2005)
- DOT will **not** modify bridge opening schedules without proper public and agency involvement
- DOT has contacted Coast Guard regarding remote operation and received their comments in a July 6, 2005 letter

Coast Guard Information



- “The Coast Guard imposes no objection to your plan to automate and remotely operate the bridges.”

Coast Guard Information

- DOT will be following bridge opening request protocol (Section 117 of Coast Guard Pilot):
 1. Marine Radio or Telephone
 2. Sound (Horn)
 3. Visual (Flag, lights)

Current “Remote Control” Projects

- Menasha
 - Planned for implementation in 2008
- Oshkosh
 - Planned for implementation in 2010



Current “Remote Control” Projects

- Menasha
 - 2 Moveable Bridges on Gov’t Canal
 - Racine Street will be host bridge
 - Tayco Street will be operated Remotely
 - Will be retrofitted with sensitive visual and audio equipment
 - Will still be capable of on-site operation in an emergency
 - One operator for the two bridges

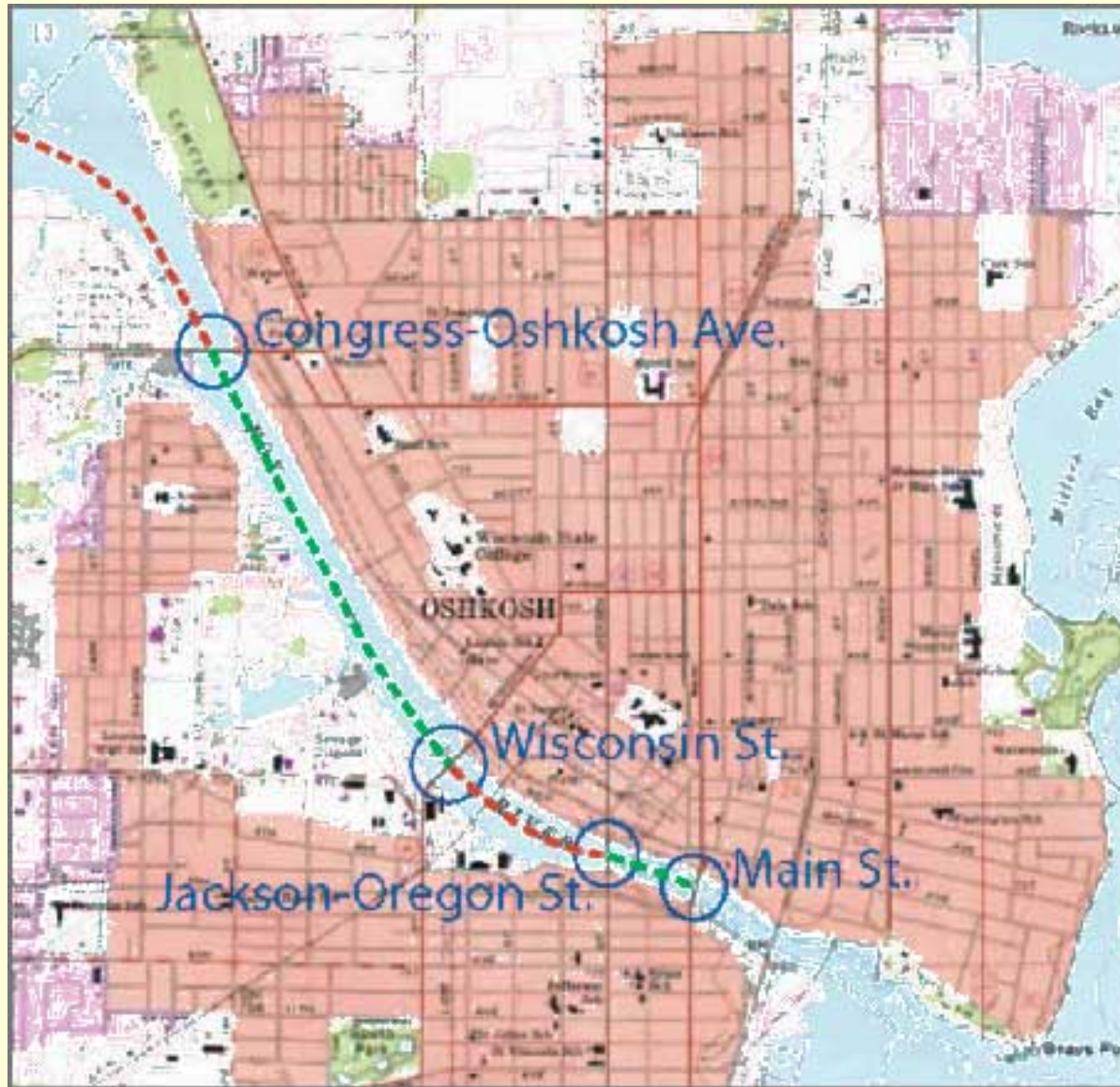
Current “Remote Control” Projects



Current “Remote Control” Projects

- Oshkosh
 - 4 Movable Bridges on Fox River
 - Wisconsin St. (WIS 44) will be host bridge
 - Three remotely controlled bridges
 - Main St. (US 45)
 - Jackson-Oregon St.
 - Congress-Oshkosh Ave. (WIS 21)
 - Will be retrofitted with sensitive visual and audio equipment
 - Will still be capable of on-site operation in an emergency
 - Two operators for the four bridges
 - Currently no plan for Winneconne

Current “Remote Control” Projects



URS Feasibility Study for Oshkosh

- How long to open and close an Oshkosh bascule bridge?
 - Field timed openings ranged from 2.5 to 4 minutes
 - Some additional time for communication with vessels and logging data
 - Also examined 10 years of bridge logs for historical timing
 - Max number of openings at a single bridge in one hour was 10 on Sep. 1, 2002 at Winneconne
 - 60 min./10 openings = average 6 minutes per opening
 - URS established a 6 min. time for one operator to complete one opening cycle
 - Each operator assumed to handle 10 opening per hour
 - If we divide the peak hourly demand at all four bridges by 10, we can determine the number of operators needed

URS Feasibility Study for Oshkosh

- Analyses of current Oshkosh bridge operations
 - In 2003:
 - Six days with no bridge openings, meaning two shifts on each of the four bridges with zero operations
 - $6 \times 4 \times 2 \times 8 = 384$ hours (48 shifts) of paid time and benefits but no bridge operations
 - On busiest day, the most openings at a bridge was 48 during 16 hours of operation
 - $48 \times 6 \text{ min./opening} = 4.8 \text{ hours} = \underline{30\%}$ of 16 hour work day
 - At six min./opening, bridge operations at all four bridges required approx. 716 hours of the total 11,008 hours of manned compensated time during the 2003 season. This is equivalent to 6.5%.

URS Feasibility Study for Oshkosh

- Number of operators needed to handle peak demand with remote control
 - Busiest day for bridge openings in 2003 was July 5th (holiday)
 - Weather: Sunny, High 87°

| Bridge | Openings on July 5 th | Busiest Hour 12-1pm |
|--------------|----------------------------------|---------------------|
| Wis. St. | 47 | 5 |
| Main St. | 48 | 5 |
| Oregon St. | 48 | 5 |
| Congress St. | 27 | 3 |
| Total | 170 | 18 |

- If we can do 10 openings in one hour with one operator, then we need $18/10 = 1.8 = 2$ operators on each shift
 - Two operators/shift with remote control: 53% of time is spent working
 - Four operators/shift w/o remote control: 27% of time is spent working

URS Feasibility Study for Oshkosh

- Number of operators needed to handle reduced demand with remote control

- July 7, 2003 – 35 openings during the 16 hours
- Weather: Sunny, High 84°

| Bridge | Openings on July 7 th | Busiest Hour 2-3pm |
|--------------|----------------------------------|--------------------|
| Wis. St. | 7 | 2 |
| Main St. | 8 | 2 |
| Oregon St. | 10 | 2 |
| Congress St. | 10 | 2 |
| Total | 35 | 8 |

- Need $8/10 = .8 = 1$ operator
 - One operator with remote control: 22% of time is spent working
 - Four operators w/o remote control: 5% of time is spent working

URS Feasibility Study for Oshkosh

- **Milwaukee/Oshkosh Comparison**

- Oshkosh bridges have more individual openings per year than Milwaukee bridges
 - Plankinton Ave.(remotely operated) = 1,292 (2003)
 - Wisconsin Ave. = 1,845 (2003)
- Milwaukee operates three bridges with one operator (peak) and is planning on operating four with one
- WisDOT (Oshkosh) will operate two bridges with one operator (peak)
- No boater delay is anticipated
 - Delay is theoretically possible if three simultaneous openings are required (Occurred seven times on the three summer holidays of 2003)
- It may be possible to operate four bridges with one operator on off-peak hours
- May need three operators for holiday traffic such as 4th of July (New Wisconsin bridge will have 3 operator stations)

URS Feasibility Study for Oshkosh

- Annual cost savings of \$240,000
- Remote Operation makes better use of resources, especially in off-peak hours
- Updated electronics are planned for the existing bridges independent of conversion to remote control
 - Reduces potential for human error
 - Provides smoother operation → reduces lock wear
 - Provides system status information & warnings
 - Enables computerized opening log data collection
 - Enables remote diagnosis of problems

Where Do We Go From Here?

- DOT is committed to no service reductions and a safe level of service under remote operations
- DOT will work with Winnebago County and City of Menasha from now until implementation to coordinate current and future bridge operator needs
- More coordination and communication needed with local officials, emergency service providers, and boating public prior to implementation

Where Do We Go From Here?

- DOT is currently reviewing Bridge Operator procedures and opening protocol
- DOT will be strictly following Coast Guard bridge opening protocol starting with 2006 boating season
- Conversion process will involve partnering with bridge operators for their experience

Questions and Comments



Remote Operation of Moveable Bridges in Winnebago County